

CLAIMS

1. An ink jet print cartridge structure comprising one or more semiconductor substrates mounted on a substrate holder, the substrate holder having a top surface having a perimeter and containing one or more substrate locator wells, each well having a plurality of well walls and a well base, each well base including at least one ink feed slot therein, the holder also containing side walls attached to the top surface along the perimeter thereof, wherein one or more of the side walls contain fins for convectively removing heat from the substrate carrier.

2. The structure of Claim 1 wherein the substrate holder comprises a cast, molded or machined metal selected from the group consisting of aluminum, beryllium copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing.

3. The structure of Claim 1 wherein the substrate holder is comprised substantially of aluminum or zinc.

4. The structure of Claim 1 further comprising a coating or layer of silicon dioxide thereon.

5. The structure of Claim 4 wherein the coating or layer of silicon dioxide has a thickness ranging from about 0.1 to about 2.5 microns.

6. The structure of Claim 1 further comprising a coating or layer of poly(xylolene) thereon.

7. The structure of Claim 6 wherein the coating or layer of poly(xylolene) has a thickness ranging from about 0.1 to about 10 microns.

8. The structure of Claim 1 wherein the substrate holder is made of a material containing a high content of carbon fibers or graphite.

9. The structure of Claim 1 wherein the substrate holder is made of a metal-ceramic composite.

10. The structure of Claim 1 further comprising an ink reservoir or ink container body.

11. The structure of Claim 10 wherein the ink reservoir body is attached to the substrate holder.

12. The structure of Claim 10 wherein the ink reservoir body is formed integral with the substrate holder.

13. The structure of Claim 1 further comprising one or more carriage positioning devices adjacent one of the side walls of the substrate holder.

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14. A method for making a print cartridge for a multi-color thermal ink jet printer which comprises providing multi-function substrate carrier and ink reservoir body, the substrate carrier having a top surface containing one or more substrate locator wells each well having well walls, a well base and at least one ink feed slot in each well base, side walls attached to the top surface along the perimeter thereof wherein one or more of the side walls contain fins for heat removal from the substrate carrier and at least two alignment devices adjacent one of the side walls for precisely attaching the substrate holder and reservoir body to a printer carriage, mounting two or more semiconductor substrates containing a plurality of resistive elements and attached nozzle plates in the wells adjacent the well base of the substrate carrier, attaching a TAB circuit or flex circuit to the semiconductor substrates and the top surface of the substrate carrier for energizing the resistive elements on the substrates and inserting one or more ink containers into the ink reservoir body.

15. The method of Claim 14 wherein carrier is a cast, molded or machined metal selected from the group consisting of aluminum, beryllium copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing.

16. The method of Claim 14 wherein the carrier is substantially made of aluminum or zinc.

17. The method of Claim 14 further comprising coating the carrier with a layer of silicon dioxide.

18. The method of Claim 17 wherein the silicon dioxide coating has a thickness ranging from about 0.1 to about 2.5 microns.

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19. The method of Claim 14 further comprising coating the carrier with a layer of poly(xylelene).

20. The method of Claim 19 wherein the coating of poly(xylelene) has a thickness ranging from about 0.1 to about 10 microns.

21. The method of Claim 14 wherein the carrier is made of a material containing a high content of carbon fibers or graphite.

22. The method of Claim 14 wherein the carrier is made of a metal-ceramic composite.

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23. The method of Claim 14 further comprising one or more carriage positioning devices adjacent one of the side walls of the holder.

24. The method of Claim 14 further comprising attaching the ink reservoir body to the substrate carrier.

25. A nose piece for an ink jet printer cartridge, the nose piece comprising a machined, molded or cast, substantially metal structure having a top surface containing one or more substrate locator wells each well having well walls, a well base and at least one ink feed slot in each well base, side walls attached to the top surface along the perimeter thereof wherein one or more of the side walls contain fins for heat removal from the substrate carrier, a plurality of slots along the perimeter of the side walls for precisely attaching the substrate holder to an ink reservoir body and at least two alignment devices adjacent one of the side walls for precisely aligning the substrate holder and reservoir body to a printer carriage, wherein the metal is selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc tungsten and alloys of two or more of the foregoing.

26. The nose piece of Claim 25 wherein the metal comprises aluminum or zinc.

27. The nose piece of Claim 25 further comprising a coating or layer of silicon dioxide thereon.

28. The nose piece of Claim 27 wherein the coating or layer of silicon dioxide has a thickness ranging from about 0.1 to about 2.5 microns.

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29. The nose piece of Claim 25 further comprising a coating or layer of poly(xylelene) thereon.

30. The nose piece of Claim 29 wherein the coating or layer of poly(xylelene) has a thickness ranging from about 0.1 to about 10 microns.

31. The nose piece of Claim 25 further comprising an ink reservoir body attached to the nose using the slots along the perimeter of the side walls of the carrier.

32. A substrate carrier for an ink jet printer comprising a molded or cast metal body containing a substantially planar substrate surface and four sides essentially perpendicular to the substrate surface, the substrate surface including one or more substrate locator wells each having a well base for attaching thereto one or more semiconductor substrates, at least one ink feed slot in the base of the well for flow of ink from an ink reservoir attached to the body of the carrier through a cylindrical ink feed chamber in the body to the ink feed slot, wherein at least one of the four sides has a substantially planar surface extending from the substrate surface essentially perpendicular thereto for containing contact pads for electrical contact from a printer to the substrates on the body, and at least two of the four sides contain cooling fins.

33. The carrier of Claim 32 wherein the metal comprises aluminum or zinc.

34. The carrier of Claim 33 further comprising a coating or layer of silicon dioxide thereon.

35. The carrier of Claim 34 wherein the coating or layer of silicon dioxide has a thickness ranging from about 0.1 to about 2.5 microns.

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36. The carrier of Claim 33 further comprising a coating or layer of poly(xylelene) thereon.

37. The carrier of Claim 36 wherein the coating or layer of poly(xylelene) has a thickness ranging from about 0.1 to about 10 microns.

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